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NEW NORTH AMERICAN TABANIDAE (INSECTA: DIPTERA). XXIV.
FURTHER COMMENTS ON CERTAIN PANGONIINAE IN
MEXICO WITH SPECIAL REFERENCE TO *ESENBECKIA*

By

Cornelius B. Philip

Research Associate, Department of Entomology, California Academy of Sciences,
Golden Gate Park, San Francisco, California 94118

ABSTRACT: Described as new from Mexico are: *Esenbeckia (Ricardoia) leechi*, female from Oaxaca, *E. (R.) deltachi*, female and male from Chihuahua, and *Fidena flavipennis* subspecies *fisheri*, females and male from Sinaloa to Guerrero. New taxonomic status includes new subspecies assignment of *Esenbeckia melanopa* (Hine) under *E. semiflava* (Wiedemann); and *E. abata* Philip, reassigned as a subspecies of *E. tepicana* (Townsend). Significant new distributional data and a key to *Esenbeckia* species in Mexico are provided. Distributional and descriptive data are also given for *Scione aurulans* (Wiedemann).

INTRODUCTION

Taxonomic concepts are being progressively refined among the species in primitive, generalized groups assigned to the widely distributed subfamily Pangoniinae (Tabanidae). Certain New World groups, however, exhibit apparently recent radiation. Among these, the genus *Esenbeckia* is represented from the southern Nearctic through the Neotropical Regions. Intensified collecting in the northern part of its range has revealed active, obviously recent speciation, especially in Mexico. Most species there, now assigned to the subgenus *Ricardoia*, have apparently diverged so recently that a few are difficult to assign, and the limits of the subgenus itself are in doubt. Nevertheless, it has taxonomic utility in the Mexican fauna, in spite of the rather arbitrary separation evidenced in the first couplet of the key appended below.

At least some species have retained the postulated primitive habit of flower feeding. As a re-

sult, collectors of flower-visiting flies, such as syrphids and bombyliids, as well as incidental insect-collecting botanists, have been prolific sources of material discussed in this and the previous paper in this series (Philip 1973). Almost nothing else is known of the biology and biting propensities of these flies except for the southern United States reports which describe the peculiar (though unreared) larvae of two species that also occur in northern Mexico, viz., *Esenbeckia incisuralis* (Say) by Jones (1956) and *E. delta* (Hine) by Burger (1977). Jones also noted coincidental feeding on flowers by both sexes and on nearby cattle by females.

My 1954 review included 24 species, subspecies, and varieties of *Esenbeckia* from Mexico, but the total has since been variously expanded to 33 plus the 2 species described below. A revised key is therefore provided to accommodate the additions. Most taxa presented as subspecies are only tentatively ranked because of

insufficient available data on their ecological and geographical limits and degree of sympatry with other taxa.

Species in two additional Mexican pangoniine genera are discussed. Distributional and descriptive data are given for *Scione aurulans* (Wiedemann) and a new subspecies is described for *Fidena flavipennis* (Kröber).

ACKNOWLEDGMENTS

I am indebted to many persons and institutions for the loan of specimens, and to Drs. G. B. Fairchild and L. L. Pechuman for valuable information.

Specimens have been studied from the following institutional and private collections, and the abbreviations used in the text for these are: (CAS)—California Academy of Sciences, San Francisco; (CBP)—C. B. Philip, at California Academy of Sciences; (CNC)—Canadian National Collection, Ottawa; (DJP)—D. J. Pletsch, Mexico City; (EMF)—E. M. Fisher, at California State University, Long Beach; (GBF)—G. B. Fairchild, at University of Florida, Gainesville; (LLP)—L. L. Pechuman, at Cornell University, Ithaca; (NMNH)—National Museum of Natural History, Washington, D.C.; (UCB)—University of California, Berkeley; (UCD)—University of California, Davis.

SYSTEMATIC ACCOUNT

Genus *Esenbeckia* Rondani

Esenbeckia (*Ricardoa*) *leechi* Philip, new species

DIAGNOSIS.—A dark, robust species with subshiny, cherry-red, entirely black-haired abdomen, orange antennae, bicolored red and black legs, and wings sharply dark brown in the extreme bases.

DESCRIPTION.—Holotype, female, length 14.5 mm. Eyes bare. Frons tan pollinose, gently divergent below, index 1/3.0; a rather slender, median, reddish keel reaching almost to anterior of 3 ocelli at vertex. Subcallus flat, grayish pollinose. Face and cheeks dark brown, thinly dusted with gray pollen, and but little protuberant below antennae; beard mostly black with scattered, inconspicuous pale hairs on lower cheeks. Scape and pedicel dark reddish, black haired; flagellum orange, the apical annulus elongated as usual. Palpus dark reddish, black haired with narrow lateral groove in middle third, short and pointed, just over a fourth length of proboscis. Latter a little longer than head height.

Thorax deep olive-brown, darker below, mostly black haired, with inconspicuous, scattered yellow hairs on notum, accentuated above wing bases; scutellum more reddish. Fore and hind femora and coxae black with concolorous vestiture; mid-femora more reddish; tibiae dark red, also with black hairs. Wings subhyaline, sharply dark brown basad of basal cells and humeral cross veins, costal cells faintly tinged outwardly; cells R_5 closed and petiolate, M_3 wide open; the usual spur veins present. Halteres brownish red.

Abdomen subshiny above and below, deep cherry-red, narrow median dark spots on first three tergites, entirely black haired without the usual pale terminal fringes or tufts.

TYPE-SERIES.—*Holotype*, male, Mexico, Oaxaca, Sierra de Miahuatlán, 2 km SE San José del Pacífico, 2438 m, 29-X-74 (D. E. and J. A. Breedlove); CAS Ent. Type No. 12490.

COMMENTS.—From other dark species of *Ricardoa* with wings sharply darkened in extreme bases, *E. (R.) leechi* is distinguished by its entirely black-haired, dark-reddish, subshiny abdomen. There is plant pollen about the lower face and chest hairs of the holotype. The collectors, Dennis E. and James A. Breedlove are a father and son, the father, an Academy botanist (for whom another attractive, unique *Ricardoa* has been named), and the son, a young, active entomological collector. It is probable that the new species is at least a flower feeder like several other *Ricardoa* species.

Named in honor of Hugh B. Leech, recently retired curator of Coleoptera in the Academy's Department of Entomology. He has collected many interesting tabanids and has been a helpful professional friend over the years.

Esenbeckia (*Ricardoa*) *deltachi* Philip, new species

DIAGNOSIS.—A rather large, brownish-red species with considerable whitish vestiture; variable, inverted black mid-abdominal triangles; and bicolored legs.

DESCRIPTION.—Holotype, female, length 17 mm. Frons gray pollinose, nearly parallel-sided, index 1/3.6, a strong, thinly pollinose (partially worn), reddish, median carina nearly reaching to median ocellus. Subcallus, face, and cheeks gray pollinose; beard, pleura, chest, and fore coxae whitish pilose. Face moderately swollen to about level of mid-scape. Antennae bright orange,

scapes a little longer than tall, with mixed dark and pale hairs. Palpi red with mixed black and some pale hairs, very short and pointed with broad flat bare lateral areas, about one-fourth length of proboscis.

Unlined notum, scutellum and first abdominal segment dull brownish overlain with steel-gray pollen and scattered short pale hairs. Legs bicolored with mostly black hairs, femora black, tibiae brownish. Wings subhyaline, costal cells yellow, spur veins about twice as long as stems; cells R_5 characteristically closed and petiolate at margins. Halteres pale brown.

Abdomen dull reddish brown with small, inverted middorsal, dark, inverted triangles not crossing tergites 2 to 4; incisures pale haired, decreasing caudally to the entirely dark last two tergites; dorsum otherwise predominantly black haired. Venter reddish brown basally with mixed pale and black hairs grading to entirely black on last two sternites.

Allotype, male, length 15.5 mm. In good agreement with holotype except for usual sex differences, and readily associated. Eyes bare with undifferentiated size of facets in contrast to the moderately enlarged area of upper facets in *E. delta* (Hine) males. Palpi more slender, and bare areas consequently reduced; about one-third length of proboscis, with mixed pale and black hairs. Black hairs on abdomen more extensive and pale-haired incisures more reduced.

TYPE-SERIES.—From Mexico. *Holotype*, female, Chihuahua, 4.8 km SE of Témoris, 25-VIII-69 (R. C. Gardner, E. S. Glaser, T. A. Sears) (UCD) and *allotype*, male, same locality and collectors as for holotype but 3.3 km N Témoris, 8-IX-69 (UCD).

Paratypes, 6 (2 males and 4 females), same Témoris locality and collectors: 1 female same data as holotype; 2 females, 29-VIII-69; 1 female, 17-VIII-68, 1219 m; and 2 males, 3.2 km and 8 km N, 22-VIII-68 (UCD, CAS and CBP).

COMMENTS.—The paratypes are from 15 to 17 mm in length. Several have plant pollen about the bases of their mouth parts and on their faces. There is a tendency in some paratypes for the triangle on tergite 4 to widen into a dark basal band. The palpi in two females are more slender, as in the males; the palpi of one male are entirely black haired. Mid-frontal carina thinly pollinose in one female, more or less worn in the others.

The possibility that this is another subspecies of *E. incisuralis* (Say) was at first considered, but this seems precluded by the white vestiture and other characters; also, the females do not have

the banded-appearing, more blackish abdomens of the smaller subspecies *tinkhami* Philip. The precinctive type-series of *deltachi* appears distinguishable from related species by a combination of larger average size, slightly narrower fronts in females, almost completely darkened femora, reduced pale hairs on abdomen, plus a row of inverted, dark triangles. *E. micheneri* Philip also has whitish vestiture anteriorly, but it is more extensively developed over the abdomen as well, two hind pairs of legs also pale haired, palpi about one-half lengths of proboscides, and fronts of females wider, their faces more swollen under the antennae.

Comments on Other *Esenbeckia* Species

Esenbeckia (*Esenbeckia*) *divergens* Philip

This species was originally described (Philip 1969) as a subspecies of *E. filipalpis* (Williston), the distribution of which is catalogued by Fairchild (1971) as Brazil, Paraguay, and Argentina. Since the only intermediate early record of Costa Rica has not been confirmed, my original suggestion is now followed that this is a distinct species from the west coast of Mexico, though the female is still unknown.

Esenbeckia (*Esenbeckia*) *minor* Kröber

The type of this species from Costa Rica was a war casualty in Budapest. It had been inadequately described as a variety of *E. fascipennis* (Macquart) from Brazil, but it is not so accepted by present authorities. Until its identity can be confidently confirmed by other specimens from Costa Rica, a presumably similar species in Chiapas must remain of uncertain affinity; it is related to *E. mejiai* Fairchild of Central America, with similar broad, compact body, long palpi, and bare face, but it is more brownish with darker femora and halteres.

Esenbeckia (*Esenbeckia*) *wiedemanni* (Bellardi)

Twenty-nine females, much the longest series that I have seen of this sparsely represented species in collections, were taken recently in one day by Dr. Dennis E. Breedlove and son, James, during botanical studies on the southwestern slopes of Cerro Mozotal in Chiapas (23-XI-76, 213 m, near Municipio Motozintla, CAS). They also netted four on the southwestern slopes of Vulcan Tekana (14-XII-76, 213 m, near neighboring Municipio Unión, Chiapas). Additional single females were taken southeast of La

Trinitaria (2-XI-76, 1006 m) and from a foothill of Cerro Boquevan (15-XII-76, 2438-2743 m, also near Municipio Motozintla), deposited in CAS. The flies were captured mostly on flowers of Compositae without attempted attack on the collectors, and, curiously, without any males present at these blossoms.

Bellardi thought that he was proposing a new name for a preoccupied Wiedemann species when he proposed the name *wiedemanni*. The two types in Turin, Italy, were redescribed by me in 1954. They have elongate, spatulate palpi. An additional specimen in the Turin collection has more pointed, *Ricardo*-like palpi, and these palpi are also over half the length of the proboscis. All of the present series have the pointed palpal variation and with partially sclerotized but flexible labella. The broadened, compact, subshiny abdomens make this another Mexican species intermediate with the subgenus *Ricardo*.

Previous records from Guerrero and Chiapas may have been infrequent because the species is montane. A female collected by Dampf from Chemique, Chiapas, 15-XI-34, is labelled in his writing "Jicqnojave" [?] "pic. batic," which may refer to a mountain peak. A male from the previously unlisted state of Oaxaca was also captured on a mountain and is herewith described as the neallotype of *E. wiedemanni* (Bellardi).

DESCRIPTION OF NEALLOTYPIC.—Male, length 16.5 mm. Except for the usual sex differences, this agrees well with the female, and is readily associated. The eye facets are nearly homogeneous in size. The palpi, though a little more slender than in the female, are rounded, not pointed apically, and about half the length of the proboscis, which is also equal to about head height. The femora are obviously darker brown than the reddish tibiae, with the wing fumidity likewise intensified baso-costally. The abdomen is subshiny, reddish brown, with pale hair tufts on outer corners of tergites 2 to 5.

COLLECTION DATA FOR NEALLOTYPIC.—Male, Mexico, Oaxaca, Cerro San Felipe, 1800 m, 18-X-48 (H. O. Wagner), CAS Ent. Type No. 13036.

***Esenbeckia (Ricardo) semiflava* subspecies *melanopa* (Hine)**

This species was based on two females from Sinaloa (no date). I have seen one other specimen from that state collected in October. Since describing a melanistic variant of *E. semiflava*

(Wiedemann) as var. *melanista* (from Michoacán and Jalisco, both collected in September), I have noted a similar divergence in color in *E. melanopa*, and likewise consider this also to be but a variant of typical *E. semiflava*, distinguished by its yellow vestiture on cheeks and thorax. Of the strikingly bicolored, typical *E. semiflava*, I have seen three males and five females from Morelos, Michoacán, and Nayarit, all taken in October, and Fairchild (1971) adds Guerrero and Veracruz in his catalog.

Material is still too meager to determine if there is any intergradation of forms, or any significance in the geographic separation, but to make the names available, they are here treated as subspecies.

***Esenbeckia (Ricardo) semiflava* subspecies *melanista* Philip**

The type female was taken in Michoacán. Recently two specimens of each sex, taken also in Michoacán, were supplied by Dr. W. W. Middlekauff; this enabled my describing the hitherto unknown male of the species. Two recently collected females agree with the holotype, as could be expected in this group; the two males show less melanism on the abdomen than in the female holotype.

DESCRIPTION.—Neallotype, male, length 16.5 mm. Eyes bare, holoptic with undifferentiated-sized facets. Head and thoracic characters as in the female, jet black with entirely black vestiture, the palpi likewise very short, about one-fifth the length of the proboscis. However, the abdomen is more yellow on tergites 2 and 3, plus the entire venter; a small inverted dark triangle nearly crosses tergite 3; tergite 4 is blackish with narrow yellow edges, as in the female; the black more restricted mesially on the following tergites.

COLLECTION DATA FOR NEALLOTYPIC.—Male, Mexico, Michoacán, "Cotija & Vic.," 8-IX-72 (E. A. Kane and B. Villegas), CAS Ent. Type No. 12865.

COMMENTS.—The two males have extruded genitalia as though recently in copula. Plant pollen was not observed on mouth parts of any of the four specimens. The second male differed from the neallotype only in having a narrow brown line in place of the median triangle on tergite 3.

In addition to the entirely yellow abdomens with concolorous hairs behind the black tergite 1, the few males seen of typical *semiflava* have some scattered yellow hairs among the black ones on faces, chests, pleura, and fore coxae.

Esenbeckia (Ricardoia) caustica (Osten Sacken)

It is disappointing that, in spite of considerable recent collecting in Durango, no females have been seen of this large, mostly blackish species. If it shows the sexual dichromatism frequently found in other *Ricardoia*, the female would be expected to be at least 18 mm in length, probably black and black haired, including the beard, with reddish-orange antennae and tibiae, and perhaps reduced reddish spots on the sides of tergite 2. The species belongs in *Ricardoia* based on the proboscis (3.5 times longer than short black-haired palpi) of the type, which I examined in the British Museum in 1953. It should run in the key to the group with extreme bases of wings sharply dark. I have discussed (1954) the previous mistaken synonymy.

Esenbeckia (Ricardoia) schusteri Philip

One female, additional to the type-series of a female and 2 males from Chihuahua, was recently taken by D. E. and J. A. Breedlove in Sinaloa, 3.2 km S of Ocurahui, Sierra Surutato, 1981 m, 1-X-70 (CAS). Pollen adherent to facial and chest hairs indicates probable capture on flowers.

Esenbeckia (Ricardoia) tepicana (Townsend)

Since my discussion (1954) of females but no recognized males, plus only the male and five female types of *E. abata* Philip, a considerable subsequent series of pertinent males and females now reveals that my original suspicion, that eventually integradation might be discovered, was justified, and that the status of *E. abata* should be reduced to that of a melanistic variant. The typical, predominantly yellow-haired form occurred in three males, two females, and one intermediate from Morelos (the type state for *E. abata*; the allotype male, also mostly yellow haired though taken with the melanistic holotype and paratype females!), in two females and an intermediate female from Guerrero, in a female and an intermediate from Michoacán (September), and four males from Puebla (taken with two *abata*-form females). The last females were collected a month later in same locality where the only male, presumed to be a melanistic variant in this dichromatic species, had predominantly black vestiture in beard, on chest, and on dorsum of the darker reddish abdomen, plus dark brown halteres. An additional female of *abata* was dated November; except as otherwise noted, all the above were

taken in October between 1680 and 1980 meters in altitude, and most of both sexes carried flower pollen on head and chest hairs.

The two forms thus fly together, but the extremes in females are entirely different in appearance for key purposes and are treated as physiologic subspecies for taxonomic purposes.

Esenbeckia (Ricardoia) planiventris (Macquart)

After seeing and discussing (1954) only blackish syntypes of this species in the Muséum National d'Histoire Naturelle, Paris, I have seen males from Sonora, Nayarit, Colima, Morelos, and a female from Guerrero. I have seen longer series of variety *saussurei* (Bellardi) (type from Veracruz seen in Turin), of either or both sexes, from Sonora, Nayarit, Colima, Jalisco, and Guerrero. It is still too early to know if localized habitat influences account for variability, from the dark typical form with bicolored legs, to entirely reddish forms (including the legs), and to forms with various patterns of black to orange vestiture.

Three large (17.5–19 mm) males, taken together recently in Nayarit, 22.5 km NW of Tepic, elev. 550 m, 11-X-75 (Powell and associates) (UCB) emphasize this variation. One male is dark mahogany-brown with entirely brown to black vestiture and strongly bicolored legs; the second is more brightly reddish with orange hairs laterally on all tergites, on the entire venter and beard, and the femora are a little darker reddish than the tibiae. The third is intermediate—brown abdomen with lateral orange hairs only on outer corners of tegites 4 caudad, beard brown, and femora darkened basally. Baso-costal infuscation is about the same in all. Such variants in sympatric individuals complicate their inclusion in keys, assuming they comprise a single species, *planiventris*; regardless, the name *saussurei* is useful for placing the different-appearing, lighter forms.

This is another instance where the pre-1960 concept of "variety" would have had utility for nomenclatorial and key purposes; for example, pending discovery of typical dark *planiventris* in Veracruz where the type of *saussurei* originated. While such incomplete information was accumulating on these two "species," Fairchild originally believed them specifically distinct on palpal characters but catalogued (1971) them as subspecies, as I had considered them (1954), before the extent of their distributional overlap was

known. In discussing variations in 11 specimens of *saussurei* from Guerrero, Williston (1901) noted, "... the abdomen varies in depth of colour, sometimes to almost black . . ."

Esenbeckia (Ricardo) weemsi Phillip

Until now, the holotype female from Sinaloa has remained unique. Six additional females were recently taken in Jalisco, 3.2 km N of Chapala, 22-X-73 (S. C. Williams and C. L. Mullinex), and another from Puerto Los Mazos, 14.5 km N of Autlán, 29-VIII-70 (M. Wasbauer) (CAS). Some significant variation includes: length, 12-15 mm, dark frontal keels variably worn and prominent, hind tibiae not darker reddish than fore pairs, and abdominal colors vary from predominantly reddish to black behind tergites 3 and entire venters. Plant pollen on the body of several specimens indicates flower visitation, but one collector reported the flies were netted about their persons.

Significant New State Locality
Records

Esenbeckia (Esenbeckia) illota—Nuevo León, 2 males, dates not known; Campeche, female, May.

Esenbeckia (Ricardo) curtialpis—Durango, male, female, Oct.; Tamaulipas, Jalisco, sexes not indicated (identified GBF); *downsi*—Sinaloa, female, Oct.; Nayarit, female, Sept.; *flavohirta*—Sinaloa, 2 males, female, no date; Jalisco, male, Oct.; Nayarit, male, Oct.; *incerta*—Jalisco, female, Oct.; Nayarit, 2 males, female, Sept., Oct.; Guerrero, male, Oct.; *incisuralis* var. *tinkhami*—Chihuahua, male, Aug.; *nigronotata*—Durango, male, female, Aug.; *pavida*—México, Distrito Federal, female, Sept.; Michoacán, 3 males, female, Sept.; *painteri*—Sinaloa, female, Oct.; *scionodes*—Jalisco, female, Oct.; *seminuda*—Chihuahua, male, 4 females, Aug., Sept. Detailed data for these specimens (which were sent to me by various individuals and institutions) are on file at CAS.

Key to Mexican *Esenbeckia*

- 1a. Proboscides seldom either more than head height or more than twice as long as palpi; frequently rather slender bodied (*Esenbeckia* s. str.) 2
- 1b. Proboscides mostly some, or much longer than, head, and palpi seldom half their lengths; abomen usually robust,

- often inflated
- (subgenus *Ricardo* Enderlein) 8
- 2a. Abdomen predominantly unicolorous with varying patterns of pale pile 3
- 2b. Abdomen sharply bicolored, first 2 or 3 tergites yellowish to red with varying-sized black macules mesially, black thereafter 7
- 3a. Abdomen rather flat and broad, subshiny dark reddish to brown with lateral fringes or tufts of pale hairs; size about 15 mm 4
- 3b. Abdomen usually more elongated, paler and duller, yellowish to green in color; usually smaller, under 15 mm 5
- 4a. Wings sharply blackish, including squamae, basad of axillary incision; lateral hair tufts pale straw yellow to white; face thinly dull-gray pollinose (Guerrero) *wiedemanni* (Bellardi)
- 4b. Infuscation expanded baso-costally, the squamae yellowish; outer tergal fringes brownish yellow; face "naked" ("Mexico") (♂) *fuscipes* Enderlein
- 5a. Body and legs concolorous, pale yellow to brown 6
- 5b. Abdomen deep jade to paler green (or yellowish in faded specimens, at least hind femora and thorax darkened) (British Honduras and Guatemala through Central America; ?Chiapas) [*prasiniventris* (Macquart)]
- 6a. Abdomen slender, pale brown, black-haired, except for pale-haired first segment; legs entirely pale; palpi broadly sabre shaped (Nuevo León, Quintana Roo, Chiapas; Central America) *illota* (Williston)
- 6b. Abdomen mostly pale haired, proportionately unusually swollen, pale brown with vague pale incisural bands which widen caudally; coxae and femoral bases darker than thorax; palpi slender, pointed; (Durango; southern Texas) *micheneri* Phillip
- 7a. Hind legs blackish; females with strong frontal keels (Guatemala; ?Mexico) [*translucens* (Macquart)]
- 7b. Hind legs strongly bicolored; female frontal carina weak in upper front unless accentuated by wear (Nayarit) *divergens* Phillip
- 8a. Females 9

- 8b. Males 43
- 9a. Cells in extreme base of wing (first M, first C) behind axillary incision, humeral cross vein in costal cell, and usually alula and squame as well, deep brown to blackish, in sharp contrast with 2 basal cells (R, second M) and outer costal cell ... 10
- 9b. Costal cell uniformly colored on both sides of humeral cross vein; if extreme base of wing darkened, this becomes diffuse outwardly 22
- 10a. Body sharply bicolored, blackish to and including abdominal segment 1, bright yellow from segment 2 caudad *semiflava* (Wiedemann)
- 10b. Body not thus sharply bicolored, usually darkened, at least caudally 11
- 11a. Dorsum of abdomen dark brown to blackish with tergite 2 in sharp contrast, bright yellow (rarely, only laterally) (Sonora, Michoacán, Sinaloa) (*semiflava* subsp.) 12
- 11b. Abdomen not with bright (or rarely dull) yellow girdle confined to tergite 2 13
- 12a. Beard and thorax with vestiture strongly blackish; palp short and blunt, scape about as long as tall *semiflava* subsp. *melanista* Philip
- 12b. Thorax olive-brown with vestiture and beard yellowish; palp elongate, pointed, scape distinctly longer than tall *semiflava* subsp. *melanopa* (Hine)
- 13a. Body, appendages, and most vestiture dark brown to black, hind tarsi more reddish; abdomen coarsely orange haired caudally 14
- 13b. Not with this combination of dark body, blackish appendages, and dense orange pile behind 15
- 14a. Dark brown to black, apical annuli of antennae reddish; orange pile extending forward to middle or more of tergite 2 (Zacatecas to Guerrero) *pavida* (Williston)
- 14b. Intensely black, including flagellums; caudal orange pile terminating abruptly on tergite 4 (Michoacán) .. *painteri* Philip
- 15a. Abdomen behind segment 1 dark ruby-red, entirely black haired, above and below (Oaxaca) *leechi* n.sp.
- 15b. Abdomen not colored as above 16
- 16a. Large bee-like species with bright to pale-yellow pile on olive-drab to blackish thoracic integument, and pile thickset, blackish on abdomen; appendages reddish brown, femora black (Durango) ... *breedlovei* Philip
- 16b. Not such large, blackish, yellow-haired species 17
- 17a. Robust species, 15–18 mm; proboscides subequal to or little longer than head height, and palpi about $\frac{1}{3}$ their lengths . 18
- 17b. Smaller, under 14 mm; proboscides longer and palpi proportionately shorter 20
- 18a. Frons broader than index of 1/3.0; face but little produced above, dull pollinose; hairs of palpi and antennal bases yellow; predominantly yellow-haired species (Durango) *gertschi* Philip
- 18b. Frons narrower; face moderately produced above to about level of mid-scapae and with subshiny areas; palpi and antennae black haired; more sparsely black-and-yellow-haired species with dark, unicolorous hind legs 19
- 19a. Abdomen reddish on first 3 segments, mostly yellow haired with median, elongated dark spots (Sinaloa) . *weemsi* Philip
- 19b. Abdomen brownish black without pattern, mostly black haired basally, yellow hairs caudally (Chihuahua) *schusteri* Philip
- 20a. Venter and halteres yellowish red, body vestiture, often including palpi, predominantly yellow (Nayarit to Morelos) (= ? *basilaris* Wiedemann, 1830 not 1828).. *tepicana* (Townsend)
- 20b. Venter and halteres brownish black, body vestiture and usually palpi, black haired 21
- 21a. Beard and much thoracic vestiture pale yellow to creamy (Michoacán to Puebla) *tepicana* subsp. *abata* Philip
- 21b. Entire body vestiture blackish or only beard pale variant of *tepicana* subsp. *abata* Philip?
- 22a. Face entirely shining yellow; appendages and body mainly orange to honey-yellow; fronts subparallel-sided above with non-contrasting, reduced, bare median carinae 23
- 22b. Face pollinose, often thinly so, at least under the antennae; if parafacials naturally shiny, body, appendages, and/or fronts not as above 24

- 23a. Size over 13 mm; abdomen broad, truncate behind (occasionally with dark, indefinite, narrow median line on tergite 2 and darkened caudally); frontal carina variably prominent in upper two-thirds according to wear; face protuberant to end of scape; palpi nearly one-half length of proboscis (Honduras; Chiapas?) [mejiai Fairchild]
- 23b. Size under 13 mm; abdomen more slender, rounded behind (without integumental markings); frontal carina strong in upper three-fourths; face protuberant to about level of mid-scape; palpi shorter, about one-third length of proboscis (Oaxaca) *mexicana* Philip
- 24a. Abdominal integument practically unicolorous yellowish to black, vestiture frequently pale or orange 25
- 24b. Abdomen with some integumental pattern, at least dull red sides anteriorly, sometimes sharply bicolored or (at least first segment contrasting, pallid) with pattern of macules 33
- 25a. Cells R_5 of wings narrowed but not closed (body including scutellum predominantly black, legs bicolored) ("Mexiko") ?*fidenodes* (Enderlein)
- 25b. Cells R_5 characteristically closed 26
- 26a. Legs bicolored, or at least hind femora basally, broadly, and plainly darker than tibiae 27
- 26b. Legs uniformly colored, reddish or yellow or black haired 32
- 27a. Medium-sized (14 mm), black-bodied, beelike species; femora one-fourth to one-third reddish distally; first 2-3 abdominal segments red with orange hairs; antennae and palpi orange-reddish with black hairs; face short, blackish, but little swollen (Tamaulipas) *nitens* Philip
- 27b. Differing in more than one of these characters 28
- 28a. Abdomen entirely dark haired or with orange fringes on outer tergal corners; all femora darkened; wings markedly paler behind or in some cells 29
- 28b. Abdomen with at least paler-haired fringes or edges; chiefly hind femora darkened; wings more evenly fumose 31
- 29a. Palpi short and stubby, not pointed, almost one-fifth length of proboscis; vein margins strongly fumose (no lateral orange fringes) (Sonora) *curtipalpis* Philip
- 29b. Not with this combination, and discs of several cells not especially paler 30
- 30a. Abdomen dark brown-black with bright orange outer fringes caudally; legs bicolored (Sonora to Guerrero) *planiventris* (Macquart)
- 30b. Abdomen lighter, from dark reddish brown with bicolored legs to entirely reddish including legs, with or without variable patterns of orange hairs laterally and ventrally (Sinaloa to Guerrero) *planiventris* var. *saussurei* (Bellardi)
- 31a. Size robust, about 15 mm, abdomen broad and truncated caudally (if sides obscurely reddish, see also couplet 39); proboscis markedly longer than head height, labella porrect and pointed; basal annulus of flagellum taller than scape (femora mostly black haired) (Chiapas) *hoguei* Philip
- 31b. Smaller, 14 mm or less; abdomen more rounded behind, less broad; proboscis but little longer than head, labella more ovoid, flexible; basal annulus subequal to height of scape (western coast of Mexico) *downsi* Philip
- 32a. Large reddish-brown species, mostly black haired with orange fringes on sides of abdomen (Nayarit) variant of *planiventris* (Macquart)?
- 32b. Smaller, bright yellowish-orange species with concolorous vestiture *flavohirta* (Bellardi)
- 33a. Unusually small (11 mm) compact species with short palpi; dark abdomen appearing banded because of accentuated, pale-haired incisures; frons with strong reddish median keel nearly reaching anterior ocellus; face shining brown except for thin pollen under antennae (Guerrero) *keelifera* Philip
- 33b. Not such small species with strong keels and mostly bare faces 34
- 34a. Cell M_3 unusually narrowed at apex (adventitiously closed!) as much as or more than base of Cell M_2 ; abdomen black, predominantly pale haired, sides of tergite 2 dull reddish (Jalisco, Puebla) *scionodes* Philip

- 34b. If Cell M_3 infrequently, moderately narrowed, then body colors otherwise . . . 35
- 35a. Beard, chest, and fore-coxal pile whitish; robust usually gray-brown species often with rather small head (southern Nearctic and/or northern Mexico) 41
- 35b. Hairs of at least chest and fore coxae yellowish to brown; more yellowish-brown species with proportionately larger heads 36
- 36a. Robust species, 17 mm or more 37
- 36b. Smaller species, less than 16 mm 38
- 37a. Abdomen polished "reddish yellow to black," first segment dull olive-gray, concolorous with notum and scutellum; legs blackish (Chihuahua)
seminuda (Coquillett)
- 37b. Abdomen with tergite 2 yellow-red and with a prominent inverted black triangle, brownish red basally to blackish caudally; legs usually bicolored (Durango)
nigronotata (Macquart)
- 38a. Size about 15 mm; abdomen subshiny blackish behind with prominent pale incisures 39
- 38b. Size 14 mm or less; abdomen predominantly yellow or dull blackish from tergite 3 40
- 39a. Front parallel-sided without bare carina; femora pale haired (southern U.S.; northern Mexico)
incisuralis (Say)
- 39b. Front divergent below with partially denuded carina; femora mostly black haired
hoguei Philip
- 40a. At least hind legs bicolored; upper face swollen to end of scape, sides subshiny (Morelos to Oaxaca) . . .
triangularis Philip
- 40b. Legs yellowish, unicolorous; face dull pollinose, less swollen (Veracruz to Guerrero)
incerta (Bellardi)
- 41a. Palpi bluntly rounded at about half length of rather short proboscis, rufous like the antennae; notum bluish gray with pair of abbreviated, admedian pale lines anteriorly (*Esenbeckia* s. str.?, see couplet 6)
[micheneri Philip]
- 41b. Palpi one-fourth to one-third length of relatively longer proboscis, falcate and tapered to a blunt point, bright orange-yellow like antennae; notum otherwise, unlined 42
- 42a. Notum light brown with pale-margined scutellum; squamae tinted like adjacent alula; legs reddish; abdomen dull tan with wide pale incisures, but no median dark triangles though there may be suggestions of narrow mid-tergal lines (Sonora, Chihuahua; southern U.S.) . . .
delta (Hine)
- 42b. Notum and scutellum darker; femora black, tibiae brown; abdomen dull reddish with narrower pale-haired incisures and row of middorsal blackish inverted triangles (Chihuahua)
deltachi n.sp.
- 43a. Cells in extreme bases of wings behind axillary incision, dark brown to blackish, sharply contrasting with costal cell beyond humeral cross vein and 2 basal cells outward 44
- 43b. At least costal cell uniformly darkened or subhyaline and any dark infuscation not sharply confined to extreme bases of wings 52
- 44a. Body sharply bicolored, blackish anteriorly and bright yellow caudad of first segment; antennae red
semiflava (Wiedemann)
- 44b. Body not thus sharply bicolored, black with mostly yellow abdomen; if occasionally so, flagellums and at least a spot on tergite 2 black 45
- 45a. Thorax and first abdominal segment dark brown with mostly yellow hair; legs uniformly brownish black; abdomen caudad of tergite 2 reddish brown with yellow margins, tergite 2 contrasting bright yellow with an indefinite dark marking mesially (Sinaloa)
semiflava subsp. *melanopa* (Hine)
- 45b. Body not dark with such a contrasting yellow girdle on tergite 2 46
- 46a. Abdomen and hind legs deep brownish black, last 3 to 4 segments and usually beard pale yellow pilose (Chihuahua)
schusteri Philip
- 46b. Not with these characters 47
- 47a. Body and appendages dark brownish black, abdomen from tergites 2 or 3 and the last 2 sternites orange-red with concolorous coarse pile (Guerrero, Michoacán)
pavida (Williston)
- 47b. Body colors otherwise, at least antennae, often palpi and tibiae red 48
- 48a. Size rather small, usually under 14 mm 49
- 48b. Robust species, 15 mm and over 50
- 49a. Abdomen predominantly yellowish red;

- some or all femora widely reddish apically *tepicana* (Townsend)
- 49b. Abdomen typically subshiny black, sides sometimes with dark ruby-red reduced laterally or expanded over most of tergites *tepicana* subsp. *abata* Philip
- 50a. Abdomen plain, subshiny reddish brown with pale hair-tufts on outer corners of tergites *wiedemanni* (Bellardi)
- 50b. Abdomen with middorsal black triangles or spots 51
- 51a. Predominantly yellow, hirsute species, occasionally melanistic; abdomen dull reddish brown including first segment, black from segment 4 caudad (Durango) *gerschi* Philip
- 51b. Chiefly black-haired species, first abdominal segment blackish but not caudal segments (Durango) *caustica* (Osten Sacken)
- 52a. Cells R_5 narrowed but not closed (body including scutellum predominantly black, legs bicolored) ("Mexiko") *fidenodes* (Enderlein)
- 52b. Cells R_5 characteristically closed and petiolate at wing margins 53
- 53a. Face shining yellow (abdomen horn-yellow, often with indefinite dark median line on tergite 2) (Honduras; ? Chiapas) [*mejiai* Fairchild]
- 53b. Face at least thinly dull pollinose mesially 54
- 54a. Abdomen essentially unicolorous reddish brown to black 55
- 54b. Abdomen with prominent inverted dark triangles basally or modestly pale banded on tergites 2 to 4 57
- 55a. Legs blackish; 2 basal cells paler than costal cells; palpi one-third length of proboscides (Chihuahua) *seminuda* (Coquillett)
- 55b. Legs red or strongly bicolored; 2 basal cells as dark as costal cells; palpi one-fourth or less length of proboscides ... 56
- 56a. Abdomen entirely blackish and black haired; scutellum blackish *planiventris* (Macquart)
- 56b. Abdomen brownish to bright red with orange-reddish hairs laterally, or these reduced or wanting; scutellum red with paler apex *planiventris* subsp. *saussurei* (Bellardi)
- 57a. Large species, over 16 mm; abdomen behind second segment reddish brown to black *nigronotata* (Macquart)
- 57b. Smaller, under 16 mm with more yellowish abdomen 58
- 58a. Abdomen pale brownish grading into broad pale bands across incisures (Sonora, Chihuahua; southern U.S.) *delta* (Hine)
- 58b. Abdomen more yellowish red with dark basal triangles 59
- 59a. Upper face swollen to level of end of elongate scape, which is half again longer than tall, mostly black haired as are the palpi; latter not over one-fourth length of proboscis; entire costal and first M cells equally deep brown (Morelos to Oaxaca) *triangularis* Philip
- 59b. Face dull pollinose, but little swollen; scapes and palpi often yellow haired, the former subequal in length and height; palpi about one-third length of proboscides; costal and basal cells paler yellow 60
- 60a. Legs uniformly yellowish; inverted triangle on tergite 2 narrower than tall and last 3 segments black with pale hair fringes; size under 13 mm (cell M_3 wide open) (Veracruz to Guerrero) *incerta* (Bellardi)
- 60b. Femora darkened at least basally, if predominantly reddish, size larger and abdomen not darkened caudally; middorsal triangle wider than tall 61
- 61a. Size robust, 15 mm or more; abdomen frequently, and hind tibiae entirely, orange-red; cells M_3 wide open (northern Mexico; southern U.S.) *incisuralis* (Say)
- 61b. Size smaller, usually under 14 mm; abdomen usually blackish caudally; cells M_3 often narrowed at margin, as much or more than at base of M_2 (adventitiously closed) (Jalisco, Puebla) *scionodes* Philip

Genus *Scione* Walker

Scione aurulans (Wiedemann)

Most records of this species from Mexico are for the three southernmost states. It also occurs in neighboring British Honduras and Guatemala (from whose Veracruz Peninsula came the types of the synonym *Diclisia misera* Osten Sacken). I have seen in various collections: 14 females from

Chiapas, collected from 3 March to 29 April, and at altitudes (when listed) of up to 183 m; 3 from Oaxaca, 1 March and 29 May at 1219 m; and 3 from Tabasco, 1 March and 3 April. In reducing *S. lurida* Enderlein from Colombia to a subspecies of *S. aurulans*, Fairchild (1966) called attention to its disjunct distribution, without continuous intervening Central American records. Two females from Veracruz, Mexico, also suggest a variant similarly separated geographically and perhaps seasonally, but these females are not described as a subspecies pending accumulation of more material.

These are larger (15 mm) and darker than typical brighter-yellowish *aurulans*, and the abdomen is predominantly brown with black hairs and midrows of small, golden-haired triangles. Palpi are more slender and sticklike than the usual flattened, blade-shaped ones of typical *aurulans*. More specimens are needed from the area for assessment in this difficult scionine group.

Genus *Fidena* Walker

Fidena flavipennis Kröber

Fidena flavipennis fisheri Philip, new subspecies

DIAGNOSIS.—A dark reddish-brown to nearly black, compact species with yellowish-brown wings, mostly black vestiture, including heavy beards except for bright orange to yellow or occasionally creamy-white hair tufts on outer edges of abdominal segments 5 and 6, and rarely on 2, above and below. Seldom some white hairs in front of wing bases or as fringes on upper calypters in different combinations. Proboscides about as long as head and thorax together.

DESCRIPTION.—Holotype, female, 18 mm. Eyes densely short pale pilose. Frons brown pollinose, rather narrow, index 1/5.3, nearly parallel-sided, the usual triocellar tubercle at vertex. Frontoclypeus brown, sparsely grayish pollinose with bare areas mesially, produced to about level of end of antennae. Two basal antennal segments dark brown, sparsely black haired, flagellums dull reddish, evenly tapered to the pointed apical annuli. Palpi brown, black haired, rather slender and pointed. Proboscis long and slender, black, peculiarly reddish on the porrect sclerotized labellums.

Thorax brown, unpatterned, scutellum with reddish hind margin; pleura entirely black haired. Legs brown, black haired, tibiae a little more reddish. Wings smoky, more yellowish mesocos-

tally, the veins pale brown; cells R_5 closed and petiolate. No spur veins. Halteres brownish.

Abdomen dark brown, polished dorsally with sparse black hairs, duller with more black hairs below; tufts of conspicuous coarse orange hairs on outer corners of tergites 5 and 6, extending farther inward on respective sternal incisures, a few unusual orange hairs on outer corners of tergite 2.

Allotype, male, 19 mm. In good agreement with holotype but holoptic, the upper facets not enlarged; the partially extruded genitalia also with conspicuous orange hairs. It also lacks white tufts at base of wings, but has no yellow hairs on outer corners of tergite 2.

TYPE-SERIES.—From Mexico. *Holotype*, female, Nayarit, vicinity of Higuera Blanca, about 9.5 km SW of Sayulita, 29-VII-71 (E. M. Fisher); and *allotype*, male, Sinaloa, 8 km NW of Escuinapa, 25-VII-71 (E. M. Fisher); both CAS Ent. Type No. 12491.

Paratypes (55 females). Nayarit: 3, same data as holotype; 2, Rincón de Los Guayabitos, 31-VII-70 (E. M. Fisher); 14, San Blas, various dates in August 1964 (J. F. McAlpine and others of the Canadian Mexican Expedition). Colima: 1, Playa de Santoya, 12.8 km NW of Manzanillo, 27-VIII-70 (M. Wasbauer). Jalisco: 3, Puerto Vallarta, "8545" [5-VIII-45 ?] (Dampf Collection), and 5, same locality, Hotel Office, 28-VIII-76 (D. J. Pletsch); 1, 8 km SW of Copala, 975 m, 3-VIII-60 (R. A. Scheibner). Guerrero: 1, Carrizal, no date (W. G. Downs); and 3, Ixtapa, in building, 22-VII-75 (D. J. Pletsch). Oaxaca: 22, Temascal, various dates in October 1965 (D. H. Janzen and R. F. Smith); (CAS, CBF, CNC, DJP, EMF, LLP, NMNH, UCB, UCDD).

COMMENTS.—This subspecies is cordially named for Mr. Eric M. Fisher in token of his supplying part of this type-series and many other Mexican tabanids. He supplied further collecting details on the allotype male: "collecting site is in area of nice Thorn Forest on gently sloping hillside just above Hwy. 15; many Coleoptera were taken on flowering shrubs adjacent to mature forest; presumably the male was also taken on these flowers." If so, no pollen residue is now evident on mouthparts or heavy beard.

The paratypes are in general good agreement with the holotype. In a few in which the stylets are unsheathed, the stylets nearly reach the bases of the peculiarly reddish, porrect labella. The caudal, outer-abdominal hair tufts occasionally may be pale yellow to creamy white, as in a topotypic female and five of the Temascal specimens; in only one of these, but in another 5 of the 14 San Blas paratypes, there are some evident white prealar hairs, not seen in most of the others. Two of these have some yellow to creamy hairs

on the outer incisures of the second segments. Occasionally, the upper calypter is fringed with white hairs, not in any consistent combination of color characters.

This new subspecies differs from the nominate Central American form, which substantiates geographic separation, by the mostly bright orange to occasionally yellow or paler lateral hair tufts on the posterior abdomen, plus the usual lack of conspicuous white prealar tufts and average smaller size. Structurally, this subspecies seems to lie within some variation recorded for the nominate form by Fairchild (1942 and *in litt.*) farther to the south, but he also excluded a Nayarit specimen when he originally described *F. isthmiae* (= *flavipennis*). It was keyed and discussed in my 1954 review as "*isthmiae* variant."

The subspecies is distributed mainly along the Pacific Coast from Sinaloa to Guerrero, but the series from Temascal came from the Atlantic drainage in Oaxaca. Fisher reported taking the Higuero Blanco types around or on a decaying stream-side log at sea level, behind a mangrove swamp; the flies did not attempt to bite nor enter a flight trap about 30 meters away. An altitude of at least 975 meters was recorded for the Copala, Sinaloa, specimen.

Fairchild (1942) reported one of the paratypes of his *isthmiae* (= *flavipennis*) as captured while

biting a boa constrictor in the Old Panama Zoo, and he recently (*in litt.*) reported specimens attempting to bite a recently killed, still-relaxed cayman.

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